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Annual Report

FOREST PEST CONDITIONS IN WISCONSIN

1959

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WISCONSIN CONSERVATION DEPARTMENT

FOREST MANAGEMENT DIVISION

FOREST PESTS — SURVEY AND CONTROL

ANNUAL REPORT

FOREST PEST CONDITIONS

IN

WISCONSIN

1959

INTRODUCTION

The exchange of information between cooperating agencies in Wisconsin and those of the other Lake States and Canada is resulting in better knowledge of the factors affecting growth of our forest trees. Each year new problems are recognized and the older ones solved.

Recognition of problems is aided by the network of field observers. New observers are being trained annually in observing and reporting pest activity. The 1959 Forest Pest Control In-Service Training School was held at Trees For Tomorrow Camp at Eagle River March 23 to 26. Two sessions were held--one for first-year trainees and the other for a second-year group which returned for advanced work. A total of 81 men received instructions in pest observing and reporting. Sixteen entomologists, pathologists and foresters from the University of Wisconsin, the U. S. Forest Service, the Wisconsin Department of Agriculture, and the Wisconsin Conservation Department participated in the program as instructors.

A simplified version of the Form F-200 was devised and used during the season to report insect and disease activity. Reports were prepared in duplicate. One copy was retained by the area entomologist, the other forwarded to the laboratory in Madison.

Approximately the same number of forest pests were reported in 1959 as in the previous year. Populations of the more serious pests were at a low ebb with some indication that jack pine budworm and pine tortoise scale may be increasing in some localities.

A new forest entomologist was added to the pest survey and control staff, permitting a man to concentrate on laboratory activities.

Available phenological information has again been included for several pests to supplement similar data reported in 1958.

WISCONSIN PHENOLOGICAL EVENT INVESTIGATION

A technique of utilizing phenological development of trees as a means of timing insect survey and control was tested in a cooperative project conducted by the University of Wisconsin and the Wisconsin Conservation Department.

Weekly measurements of total terminal growth on sample trees were made by Department foresters in all but the densely populated southeastern counties and a few around Lake Winnebago where suitable plantations were not available. Pinus resinosa Ait. was used as an indicator.

Comparison of growth data collected at several locations will enable establishment of a series of isophenes of equal development and accelerated or delayed development may be reduced to a preselected reference point. By super-imposing insect activity on the map of theoretical isophenes, the timing of insect survey and control activities may be more critically scheduled.

The data is in the process of being analyzed.

MAJOR CONTROL PROJECTS

Saratoga Spittlebug:

Nymphal surveys were conducted on 20,000 acres in the Northeast Area and 5,000 acres in the Northwest Area in 1959. Heavy infestations requiring control were recorded on 1,534 acres in five Northeast Area counties. Spraying began on July 16 and was completed on July 19. DDT applied by aircraft was used at a rate of one pound per gallon of oil solution per acre. The operation was completed at a cost of $1.97 per acre for the insecticide and its aerial application.

The acreage treated and the cost of aerial application of insecticide is shown in the following table:

Owner	Acreage Sprayed	Cost to Owner	Cost to State	Total Cost
Florence Co. (Co. Forest Crop)	67		$ 131.99	$ 131.99
Oconto Co. (Co. Forest Crop)	62		122.14	122.14
Nekoosa-Edwards Paper Co. (in Oneida Co.)	12		23.64	23.64
Vilas Co. (Co. Forest Crop)	79		155.63	155.63
Branham Lumber Co. (private forest crop-Vilas Co.)	21		41.37	41.37
No. Highland State Forest (Vilas Co.)	722		1,422.34	1,422.34
Marinette Co. (Co. Forest Crop)	571	$404.84	720.03	1,124.87
	1,534 A	$404.84	$2,617.14	$3,021.98

White Grubs:

An estimated 4,700 acres of new plantations were treated for white grub control in 1959. All applications were made at the time of planting with the use of spray applicators attached to planting machines.

The use of a soil insecticide for the control of white grubs is fast becoming standard practice throughout the state. Aldrin is the chemical most commonly used. Best results are obtained with the spray applicators attached to planting machines , but dipping the tree roots in insecticide solution is still considerably better than no treatment at all. The following areas reported acreage treated in 1959:

Northeast	971 Acres
West Central	1,136
East Central	2,156
Southern	450
	4,712 Acres

Pine Bark Aphid:

An effort was made to control pine bark aphid, Pineus strobi, on all stock leaving Wisconsin state nurseries in 1959. Surveys of 2-0 and 2-2 white pine seedlings revealed moderate to high infestations of bark aphid in each nursery; a closely related species of aphid was also attacking 3-0 Norway pine in some nurseries.

Infested stock was completely dipped into a solution of malathion before being bundled and shipped. Effectiveness of this control effort has not been completely determined.

Applications of malathion were also made in seedling beds periodically throughout the summer. Results with this insecticide have not been entirely satisfactory when applied as spray to nursery beds. New formulations with this and other chemicals and better methods of application are being tested to find a more effective control.

MAJOR FOREST INSECTS REPORTED

COLEOPTERA:

June Beetles -- Phyllophaga spp.

Transplant losses were nominal throughout the state where aldrin treatments were used. High populations were reported in young plantations in Manchester Township of Jackson County, and in Marathon County.

White Pine Weevil -- Pissodes strobi (Peck)

Northwest Area -- The number of attacks was lower throughout the area on both white and jack pines, but an increase was noted in a few red pine plantations. Heavy adult feeding, and copulating pairs, were observed in Burnett County on April 18, and some leader mortality occurred by June 18. Pupation had commenced by that time in Burnett and Washburn Counties.

Northeast Area -- Infestations varied considerably by locality and host species. In general, attacks in white pine plantings varied from 20 to 40 per cent of the stocking in Vilas, Oneida and Langlade Counties. Infestations in red pine plantations in Oneida County reached a peak of 25 per cent--the highest ever recorded in the area on red pine. Jack pine plantings in Marinette and Vilas Counties had 10 to 30 per cent of the terminals infested.

West Central Area -- White pine weevil populations were considerably higher in 1959 than over the past several years. Attacks of 35 to 40 per cent were recorded in many Clark, Jackson and Wood County white pine plantations. Ten to 30 per cent infestations were found in open growing white pine in other counties. Adults were first observed feeding and ovipositing on April 21 in Jackson County. Infested terminals became noticeably wilted and brown about July 1, at which time pupation commenced. Newly emerged adults were first noted July 21.

East Central Area -- Population levels varied considerably throughout the area.

Southern Area -- Twenty per cent of the Norway spruce in a young mixed Norway spruce-red pine plantation in Sauk County were under attack by larvae June 12.

Root Collar Weevil -- Hylobius radicis Buch

Northwest Area -- Plantations in Polk, Burnett, Chippewa, and parts of Douglas and Bayfield Counties continued to suffer heavy attack by this weevil. Some plantings are so heavily infested that little or no merchantable material is expected from them. Red pines were more heavily attacked this year and one plantation of four-foot high Scotch pine suffered some mortality. Parasite populations were light and weevil larvae were extremely numerous during late summer in Burnett County.

Other Areas -- Root collar weevil has been reported frequently in almost all counties where their host species are present. One Jackson County Christmas tree grower treated five and six-year-old Scotch pine in a plantation that had about 5 per cent mortality. Red pines felled as a result of weevil feeding were observed in a Marinette County windbreak.

Bark Beetles -- Ips spp.

Heavy localized infestations occurred in several red and jack pine plantations where silvicultural cuttings were carried out. Damage was particularly noticeable in Bayfield and Washburn County plantations. Some damage also occurred in counties further south. In some cases, the standing attacked and killed trees were scattered high risk individuals of the suppressed and intermediate crown classes. Scattered individual trees or small pockets of trees debarked by birds, with crowns still green, were observed in the red pine plantations.

Hickory Bark Beetle -- Scolytus quadrispinosus Say

Attained epidemic levels in two mixed hardwood stands in southern Dane and Rock Counties. Mortality of bitternut hickory in both stands amounted to almost 100 per cent. Shagbark hickory was severely defoliated, particularly in the Rock County infestation, but in neither stand was this tree species selected as brood trees to the extent that bitternut was. The shagbark hickory put out a second set of leaves which were still being attacked by spring adults as late as July 27. Brood gallery construction commenced about July 22 in Dane County. Larvae were present in all but mature instars by August 18.

DIPTERA:

Pine Needle Midge

A midge which feeds at the base of red pine needles, caused from very light to moderate defoliation in many red pine stands in the state. The attack was somewhat lighter in 1959 in Wood and Adams Counties than in 1958 when terminal mortality occurred. Adult specimens have been reared and are yet to be identified by a specialist.

HEMIPTERA:

Saratoga Spittlebug -- Aphrophora saratogensis (Fitch)

Northeast Area -- Preliminary checks made in late May, 1959, indicated a successful egg hatch. Intensive nymphal surveys were conducted during late June and early July on about 20,000 acres of red pine plantation in the area. Heavy infestations, which required direct control, were found on about 1,500 acres.

Other areas -- Nymph surveys showed that spittlebug populations were very low in Juneau and Adams and moderate to heavy in a few small scattered plantations in Clark, Eau Claire, Jackson and Wood Counties. No direct control of those infestations was applied. Spittlebug populations were exceptionally light throughout the Northwest Area. Adults were first observed on July 17 in Douglas and Bayfield Counties. Saratoga spittlebug, although present in the East Central Area, did not constitute a problem. No reports of this insect pest were recorded in the Southern Area. See section on control for further information.

Pine Bark Aphid -- Pineus strobi (Htg.)

Severe infestations of pine bark aphid were found in all of the state nurseries but particularly in the Northwest, Northeast and West Central Areas. Chemical control of the affected beds or lifted trees with malathion at frequent intervals reduced spread and populations to some extent. Infestation of red pine by a closely related species was also severe in nurseries.

Pine Spittlebug -- Aphrophora parallela (Say)

Light populations were generally present throughout the northern half of the state, but higher numbers were reported in Scotch pine stands in Lincoln and Oconto Counties and at the Wild Rose Hatchery in Waushara County.

Pine Tortoise Scale -- Toumeyella numismaticum (P & McD.)

The pine tortoise scale has been on the increase in Marinette, Florence and Oconto Counties. Most severely infested are the young plantations and natural reproduction. Some scattered tree mortality has occurred in localized areas. A few heavily infested trees were reported from widely scattered areas in Adams, Clark, Dunn and Trempealeau Counties.

HYMENOPTERA:

Larch Sawfly -- Pristophora ericksonii (Htg.)

Northwest Area -- Practically all larch stands in the area had some defoliation, but in general it was lighter than in 1958. Parasitism appeared to take a heavy toll of the larvae in many stands. Predators and parasites also attacked a large number of larvae which had spun cocoons. Larval feeding was complete in the area by August 15.

Northeast Area -- Tamarack has been completely defoliated over most of this area for the past four years. Larvae had reached the fourth instar by July 10 and larval development was completed by July 27.

West Central Area -- Larch sawfly populations remained high throughout this area except in very isolated areas of tamarack in Buffalo and Trempealeau Counties. Defoliation ranged from medium to heavy and was generally lighter than in 1958.

East Central Area -- The population increased in the area with heaviest defoliation occurring in Waushara County. Diseased and parasitized larvae were present in high population areas.

Southern Area -- Defoliation by the larch sawfly was negligible in the Southern Area stands.

Jack Pine Sawfly -- Neodiprion americanus banksianae (Roh.)

Light and scattered populations were the general rule in all areas. Isolated colonies were reported in Polk, Bayfield, Oneida and Langlade Counties. An infestation of this sawfly was reported in Dane County on June 26, at which time the larvae were in their final instar.

Introduced Pine Sawfly -- Diprion similis (Htg.)

The spring generations in the Northwest Area were about normal, but later generations were very low. Parasites and disease were quite prevalent in Burnett and Polk County infestations in the fall. The spring generation was relatively numerous in the counties reported in 1958. One major extension of last year's reported range exists as a small infestation near the Village of DeSoto in southwestern Vernon County. Fall populations were much lighter than in 1958.

Red-Headed Pine Sawfly -- Neodiprion lecontei (Fitch)

Northwest Area -- This insect was present in this area only as small and isolated infestations.

Northeast Area -- Locally severe infestations were reported in Oneida, Langlade and Marinette Counties. Damage was primarily to red pine plantings and were controlled by means of hand equipment.

West Central Area -- Caused little damage in the area except for two small infestations in jack pine plantations, one of which was located in the Trempealeau School Forest where a few trees were lost and the other in Dunn County shelterbelts where control against the spring generation larvae prevented considerable loss.

East Central Area -- Very low populations were present for the second consecutive year.

Southern Area -- Second and third instar larvae of the second generation were observed August 17 with late instar larvae of the first generation defoliating a single suppressed jack pine in southern Sauk County. Mature larvae also were found July 21 in association with early instar larvae of N. swainei on jack pine in the Rio School Forest, Columbia County.

Red Pine Sawfly -- Neodiprion nanulus Schedl

Northwest Area -- Colonies were found on red and jack pines in Burnett and Douglas Counties. Infestations were generally lighter than in 1958.

Northeast Area -- Egg surveys conducted in Langlade and Oneida Counties produced only a few scattered egg clusters.

West Central Area -- The sawfly was present in many jack and red pine stands of the area in considerable numbers. Defoliation of the old needles ranged from noticeable to moderate, however, less oviposition was apparent this year than last.

East Central Area -- Some specimens were found in Portage, Waupaca, Waushara and Marquette Counties. They were most abundant near Montello, Marquette County. In no case was defoliation serious. Egg hatch commenced about May 6 near Montello.

Southern Area -- A low population still exists at the Poynette Game Farm, Columbia County.

White Pine Sawfly -- Neodiprion pinetum (Nort.)

West Central Area -- This pest was recorded only in southwestern Vernon County where a few larvae were found in a plantation which had been slightly defoliated in 1958.

East Central Area -- Larvae were absent in a small plantation which had a high population during the previous three years. A few colonies were recorded from Horicon.

Southern Area -- Localized infestations were reported on windbreaks and small acreage plantings in Racine, Kenosha, Waukesha, Jefferson, Dane, Rock, Lafayette, Richland, and Grant Counties and are assumed to be present in the remaining counties also. Ovipositing females were observed May 25 and larvae in early instars by July 6

in Grant County. Larval development was complete and cocoons spun in Jefferson County by August 4. Larvae, possibly of a partial second generation, were observed as late as September 21-28 in Rock, Lafayette and Dane Counties. Defoliation by most infestations was severe with complete defoliation of several five-foot trees in an eastern Lafayette County windbreak. A Hemipterous predator, possibly Podisus maculiventris (Say) was observed feeding on a larva of this sawfly September 28 in Richland County.

Swaines Sawfly -- Neodiprion swainei Midd

Three localized and light infestations were reported in the Southern Area--one each in Columbia, Dane and Green Counties. Egg hatch commenced and first instar larvae were feeding June 24 in Dane County. Some larvae had attained the third instar in Columbia County by July 21 and egg hatch was complete with larvae in third and fourth instars by August 10.

LEPIDOPTERA:

Jack Pine Budworm -- Choristoneura pinus Freeman

Northwest Area -- A general increase in larval populations was evident throughout the area. Some stands in Washburn and Douglas Counties received moderate defoliation and egg mass counts were fairly high over a large portion of the area and egg parasitism was low. Larvae were in the third instar by May 23 and many fourth and fifth instar larvae were found June 8. Pupation commenced about June 18 in Polk and Burnett Counties, and adults were first observed June 24. Pupation throughout the area appeared complete by July 7 and egg masses were hatching July 15.

Northeast Area -- Results of surveys in nine permanent plots established in Oneida County during 1957 in heavy infestations showed very light populations this past year. Similar results were obtained from previously heavy infestations in Marinette and Vilas Counties.

West Central Area -- Populations were at endemic levels in all parts of the area. Locations with highest populations were near the periphery of areas that supported higher populations in 1957 and 1958. Pupae and adults were observed June 18 in southern Adams County.

East Central Area -- Low populations were found in Marquette and Waushara Counties.

Southern Area -- Low populations were present in Iowa, Dane and Sauk Counties.

European Pine Shoot Moth -- Rhyacionia buoliana (Schiff.)

A drastic decline in the populations of this insect occurred in the East Central Area due to the severe winter of 1958-59. A population sample indicated that at least 98 per cent of the overwintering larvae were killed. A further reduction occurred when the residual population was attacked by parasites and predators.

Birch Skeletonizer -- Bucculatrix canadensisella (Chamb.)

Some premature discoloration and defoliation was noticeable in most birch stands of the Northwest Area. Severe defoliation occurred in Marinette and Shawano Counties of the Northeast Area. Premature discoloration and leaf fall was general in Clark, Jackson and Monroe Counties during early September in the West Central Area.

Larch Casebearer -- Coleophora laricella (Hbn.)

Populations were very low to scarce in all areas. Larvae were present in late May and early June in the Northeast Area.

Pine Webworm -- Tetralopha robustella Zell

Pine webworm was endemic in the Northwest, West Central and Southern Areas. Relatively high populations were found in Green and Richland Counties of the Southern Area. Eggs hatched and larvae were feeding by July 12 in Dane County and were in late instars in Green County by July 30. Mature larvae were collected as late as October 16 in Sauk County.

Forest Tent Caterpillar -- Malacosoma disstria (Hbn.)

Northwest Area -- Anticipated outbreaks in Douglas and northern Ashland Counties failed to materialize probably due to the heavy egg parasitism and adverse weather conditions during May. Some isolated infestations in Price and Taylor Counties resulted in light to moderate defoliation. In general, populations were very low throughout the Northwest Area.

Northeast Area -- Complete defoliation appeared over widely scattered areas of Iron and western Vilas Counties. The most severe outbreak was recorded in Langlade County where 25 sections of low grade aspen were defoliated. Pupal collections in Langlade County revealed about 60 per cent parasitism.

West Central Area -- Results of egg mass surveys conducted early in the year were negative. Egg mass surveys made in December in the northern areas indicated populations will be very low with possibly a few scattered localized areas of defoliation in 1960. See map on page 8.

Jack Pine Shoot Borer -- Eucosma sonomana Kearf

The shoot borer was present in most jack pine stands of the Northwest Area, but infestations averaged less than one per cent. In the West Central Area, 15 per cent of the trees in a typical Wood County plantation suffered some damage including loss of main terminal in 5 per cent of the cases.

Maple Insects

Maple webworm -- Tetralopha sp. near asperatella

Spargonothus acerivorna McKay

Acleris chalybeana Fernald

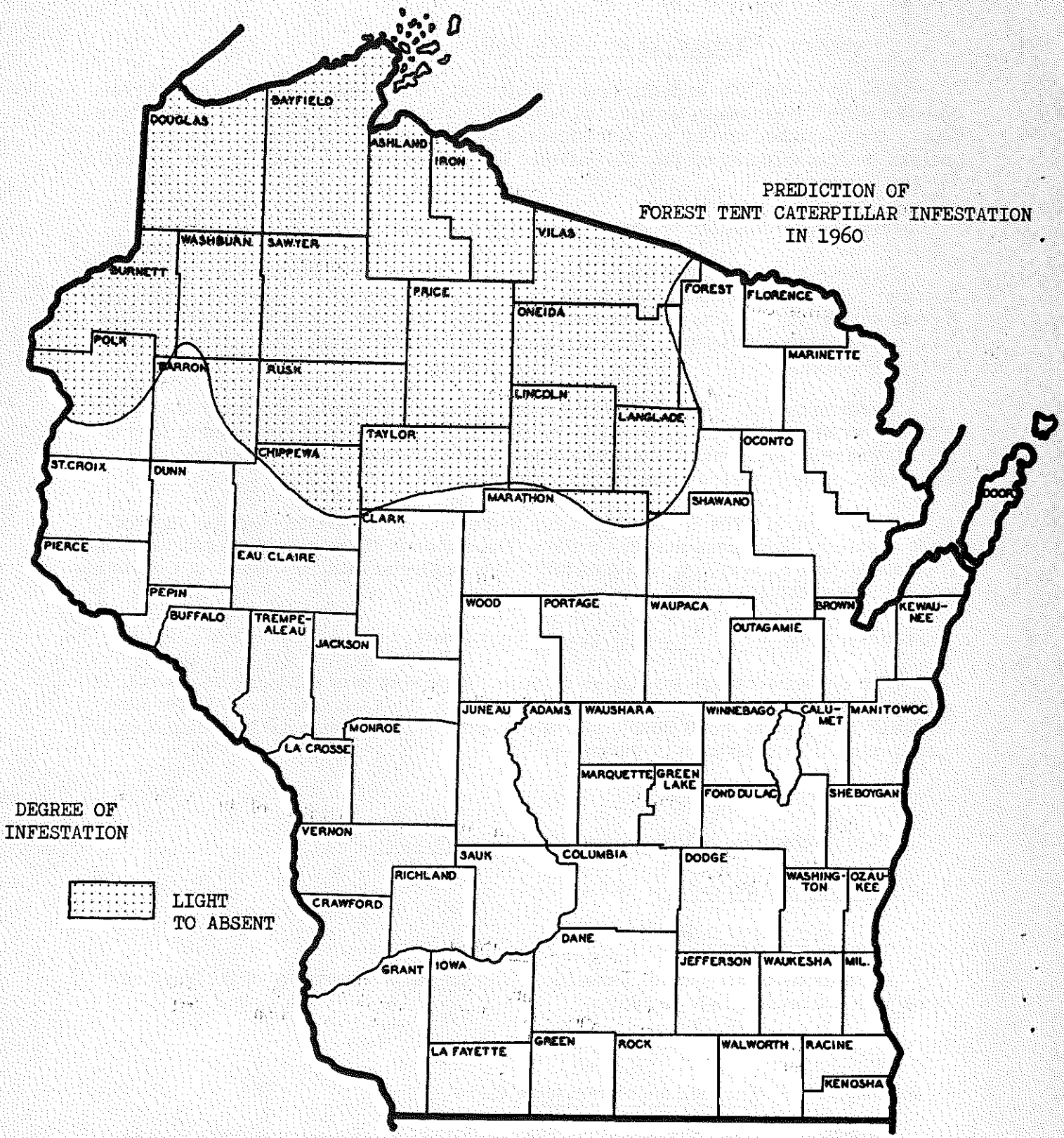
Populations of all species associated with the maple mortality of the Northeast Area were extremely light in 1959.

ORTHOPTERA:

Walkingstick -- Diapheromera femorata (Say)

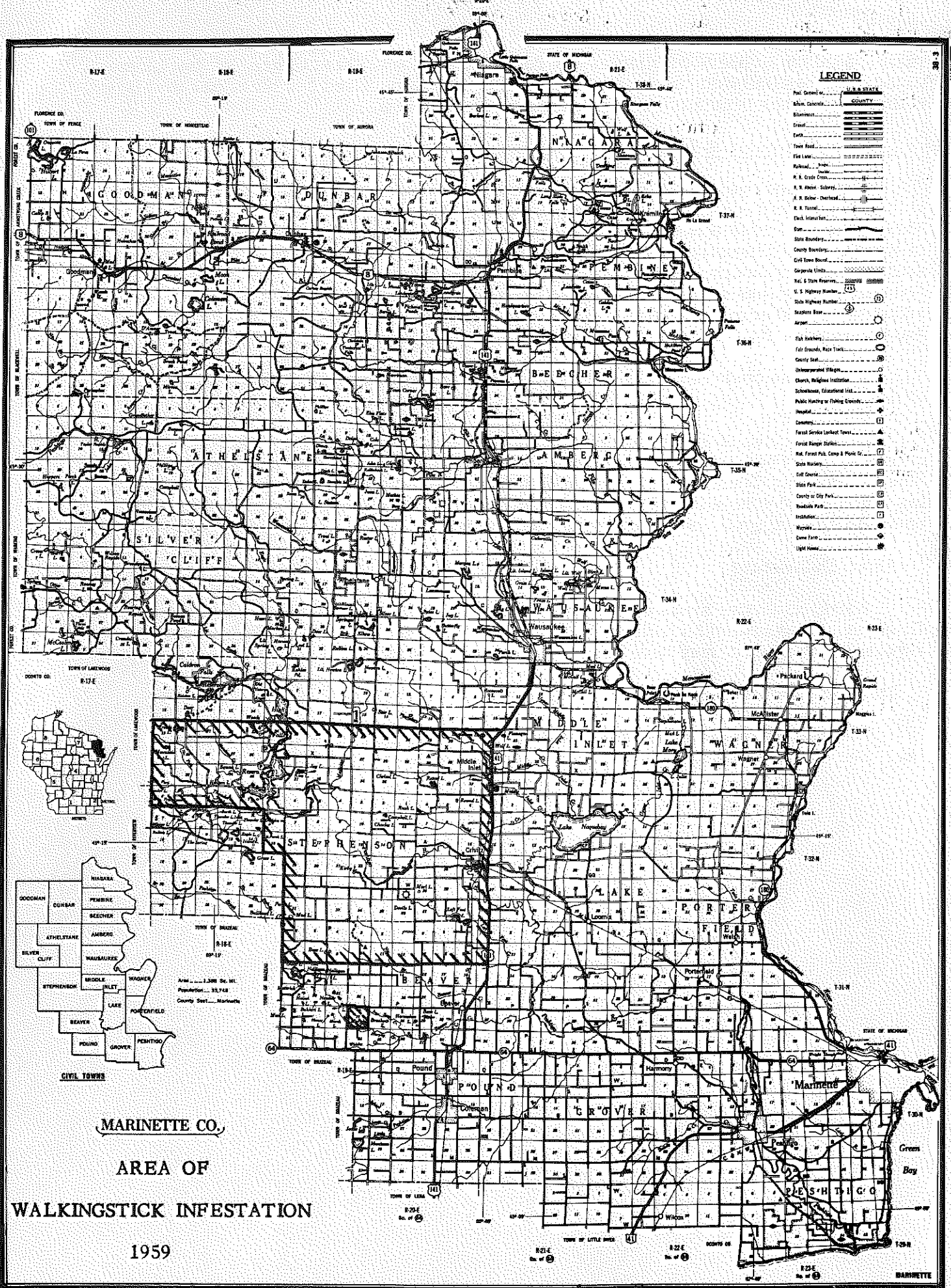
An aerial survey of Marinette County revealed an estimated 10,000 acres of complete defoliation and about 1,500 acres of moderate defoliation in the vicinity of Crivitz (See map on page 9). Most defoliation occurred in scrub oak of little commercial

FOREST INSECT CONDITIONS IN WISCONSIN 1959



ANTICIPATED AREA & DEGREE OF INFESTATION FOR 1960 BASED ON A WINTER EGG BAND SURVEY

WISCONSIN CONSERVATION DEPARTMENT


LEGEND
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STEPHENSON
LAKE
PORTERFIELD
BEAVER
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PENTIGO
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Pembine
Breed
Athelstane
Amberg
Wausaukee
Middle Inlet
Wagner
Stephenson
Lake
Porterfield
Pound
Grover
Harmony
Marinette
Peshtigo
Green Bay
Packard
McAllister
Crivitz
Beaver
Wilson
Loena
Lake Noquebay
Lake Mary
Pembine
Florence Co.
Forest Co.
Oconto Co.
Menominee Co.
Marinette
CIVIL TOWNS
MARINETTE CO.
AREA OF
WALKINGSTICK INFESTATION
1959

value. Medium to heavy defoliation was recorded over a 1,500 acre area of Eau Claire County that has suffered repeated attack. Some mortality of red and black oak in this outbreak area has been attributed to successive defoliation.

Dendrotettix quercus Pack

A localized outbreak of this tree feeding grasshopper occurred in Saratoga Township of southern Wood County and adjoining Rome Township of Adams County. This is the first year this species has been reported as causing noticeable defoliation in West Central Wisconsin. Previous records are from Shawano County. Usually scarce, this grasshopper occasionally builds up to epidemic levels. An estimated 500 acres of oak has suffered medium to heavy defoliation with lesser amounts on an additional 4,500 acres (See map on page 11). Nymphs were first reported June 10 and adults were present in mid-August; many were parasitized by nematodes.

It was also observed in the area covered by the walkingstick outbreak in Marinette County.

Other species of grasshoppers (Melanoplus femur-rubrum (Deg.) and M. differentialis (Thos.)) almost completely defoliated a 40-acre spring planting of red pine in Columbia County. This occurred in the same vicinity as a 10-acre fall planting which was destroyed in 1957. In each instance the grasshoppers attacked the most convenient living green plants in former old fields.

Aspen Defoliators

Fairly extensive areas of defoliated aspen were observed in Sawyer and Rusk Counties. Unidentified leafrollers had disappeared by the time the damage was reported. The insect may have been the large aspen tortrix.

Black Ash Defoliation

Several reports were received of defoliation or failure of black ash to leaf out. The causal organism has not been determined.

FOREST INSECT CONDITIONS
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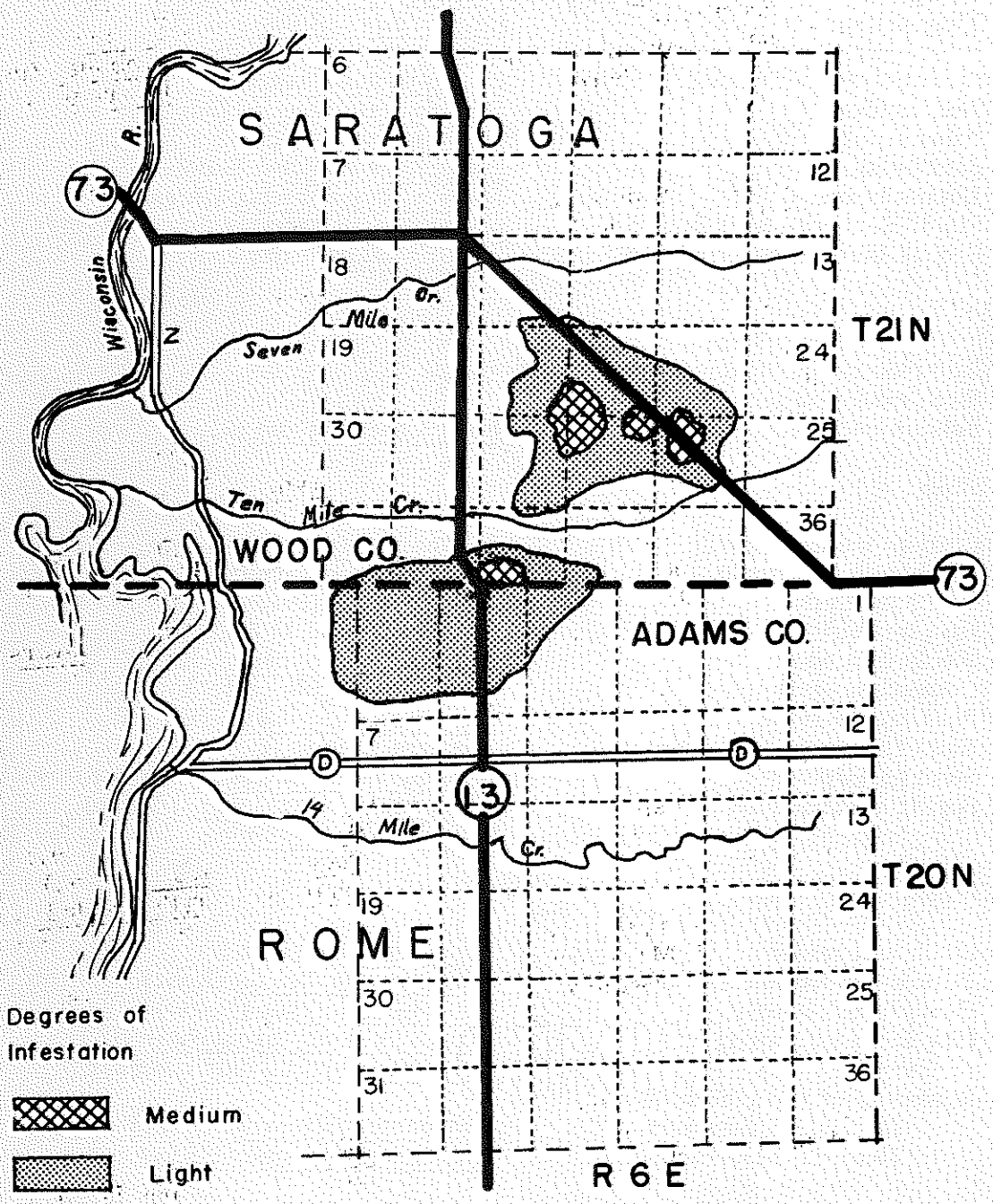

AREA OF OAK DEFOLIATION BY THE

GRASSHOPPER Dendrotettix quercus 1959

OTHER INSECTS REPORTED

COLEOPTERA:	
Pine gall weevil	Podapion gallicola (Riley)
Twig pruner	Hepermallus villosus (F.)
----------	Myeloborus fivazi Blkm.
Strawberry root weevil	Brachyrhinus ovatus (L.)
Leaf chafer	Dichelonyx albicollis (Burm.)
Pales beetle	Hylobius pales (Hbst.)
Bark beetle	Petyogenes hopkinsi Bedel.
Locust borer	Megacyllene robiniae (Forst.)
Small European bark beetle	Scolytus multistriatus (Marsh)
Bronze birch borer	Agrilus anxius Gory.
DIPTERA:	
Red pine needle midge	
Pitch midge on jack pine	
Balsam gall midge	Itonida balsamicola (Lint.)
HEMIPTERA:	
Cottony maple scale	Pulvinaria vitis (L.)
Black pine leaf scale	Aspidiotus californicus Coleman
White pine aphid	Cinara strobi (Fitch)
Elm lacebug	Corythuca ulmi O & D
Wooly elm aphid	Eriosoma americanum Riley
Cockscomb gall aphid	Colopha ulmicola (Fitch)
Pine needle scale	Phenacaspis pinifoliae (Fitch)
Eastern spruce gall aphid	Chermes abietis (L.)
Stem gall aphid	Pemphigus populi-transversus Riley
Poplar vagabond aphid	Mordwilkoja vagabundus (Walsh)
----------	Podisus maculiventris
HYMENOPTERA:	
Birch leaf miner	Fenusa pusilla (Lep.)
Yellow headed spruce sawfly	Pikonema alaskensis (Roh.)
Dusky birch sawfly	Croesus latitarsus (Nort.)
Pine false webworm	Acantholyda erythrocephala (L.)
----------	Neodiprion virginianus complex
Parasites of red pine midge	
Det. CF Muesebach	Platygaster filicornis (Ash.)
Det. EL Mockford	Psyllipsocus ramburii Selys
LEPIDOPTERA:	
Cherry scallop shellmoth	Calocape undulata (L.)
Eastern tent caterpillar	Malacosoma americanum (F.)
Pitch blister moth	Petrova albicapetana (Busck.)

Spruce Budworm	Choristoneura fumiferana (Clem.)
Green striped mapleworm	Anisota rubicunda (F.)
Fall webworm	Hyphantria cunea (Drury)
Mourning Cloak Butterfly	Nymphalis antiopa (L.)
Spruce needle miner	Recurvaria piceaella (Kearf.)
Large aspen tortrix	Archips conflictana (Wlkr.)
Saddled prominent	Heterocampa guttivitta (Wlkr.)
Pine tussock moth	Olene plageata (Wlkr.)
Zimmerman pine moth	Dioryctria zimmermani (Grote)
Bagworm	Thyridopteryx ephemeraeformis (Haw.)
White-marked tussock moth	Hemerocampa leucostigma (A & S)
Solitary oak leaf miner	Camerarea hamadryadella (Clem.)

MAJOR FOREST DISEASES REPORTED

Maple blight

An aerial survey conducted in Florence County on June 12 revealed no spread of the condition called maple blight. Frequent ground checks during the summer substantiated this observation. Within the original infestation, previously affected trees were found dying, while very few new infections were observed.

Three 1,500-foot wide strips of timber in the blight area, totalling more than 10 miles in length, were rephotographed in color at a scale of one inch to 500 feet. The strips were originally photographed at the same scale in 1958. The photography was made possible through the courtesy of the Lake States Forest Experiment Station and the Beltsville Forest Insect Laboratory aerial photography crew which donated the use of their equipment, time, and materials to the survey.

Two small patches of hard maple which displayed symptoms similar to those produced by maple blight were located in Ashland County. Trees from two to 24 inches d.b.h. were dead or dying in both locations.

Maple dieback

Surveys from the air and ground in Door County showed little change in the condition of maple there. Trees sampled in 1958 showed no additional dieback.

This condition described as dieback has been reported from numerous hardwood areas of the state. The incidence of dieback appears to have been increasing throughout the state.

Oak Wilt -- Ceratocystis fagacearum (Bretz) Hunt

Oak wilt became more widespread in 1959. New reports of it on scrub oak came from western Burnett County. In the West Central Area it probably caused more timber loss than any other insect or disease. Practically all counties in that area contain infected stands. A survey strip approximately one-half mile wide revealed 32 infestations along a 13-mile flight line across Trempealeau County. Three hundred and forty-eight infestations were observed along a 24-mile flight line across Buffalo County. In the Southern Area, oak wilt caused more extensive mortality in farm woodlots than in most previous years.

Oak wilt control was attempted in Perrot and Merrick State Parks. A root cutting plow was used to isolate infection centers.

OTHER DISEASES REPORTED

White pine blister rust	Cronartium ribicola Fisher
Sweet fern blister rust	C. Comptoniae Arth
Pine oak gall rust	C. cerebrum Hedgc. & Long
Shoestring root rot	Armillaria mellea (Wahl.) Quel.
Pine needle rust	Coleosporium solidaginis (Schw.) Them.
Jack pine needle cast	Hypodermella ampla (Davis) Dearn.
Hypoxylon canker	Hypoxylon pruinatum (Kl.) Cke.
White pine blight	Causal agent unknown
Dutch elm disease	Ceratocystis ulmi (Buisman) Moreav.
Wetwood	Erwinia nimipressuralis Carter
Smooth bark	Aleurodiscus Oakesii (B & C) Cokke
---	Polyporus sulphureus (Bull.) Fr.
Black knot	Dibotryon morbosum (Schw.) T & S

LABORATORY ACTIVITIES - 1959

The Forest Pest Control Center and Laboratory at Nevin Hatchery was completed and occupied in February of 1959. Functions during its first year of operation as well as the needs upon which they were based include the following:

1. Specimens which are sent from the laboratory to taxonomic specialists for identification or which are placed in the permanent reference collection at the laboratory must be properly preserved and labeled. Much insect material collected in past years received this attention before it was incorporated into the collection.

2. Because identification of insect species often requires information on structural characters of adult specimens, it is necessary to rear larvae to obtain these forms. Immature forms of 11 unknown insect species were reared to obtain adults for identification. A number of larval collections were also reared to obtain adults for the reference collection.

3. In areas where a forest pest threatens to reach epidemic proportions, it is important to know the status of parasites controlling the population. Sample larval and cocoon collections from populations of the following species were reared from parasitism:

Species	No. of Collections	No. of Parasites (Actual - not species)
Pissodes strobi	3	59
Pristophora erichsonii	15	48
Choristoneura pinus	3	3
Neodiprion nanulus	3	1
N. virginianus complex	1	4
N. lecontei	2	0
N. a. banksiana	1	0
N. pinetum	1	6
N. sp. (?)	2	2

Many specimens have not yet completed their development and more parasites should emerge following diapause. In addition, 22 collections of jack pine budworm eggs from the Northwest Area yielded only two parasites. From 933 walkingstick eggs collected in Marinette County, 24 parasites, all Mesitiopterus kahlii Ash., were recovered.

4. Copies of all F-200 forms are filed at the Laboratory by tree host species. A cross-file of insect and disease pests provides handy reference to their state-wide distribution. Two hundred and forty forms reporting 87 known insect or disease species were received in 1959.

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